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International application number: PCT/US05/007256

International filing date: 03 March 2005 (03.03.2005)

Document type: Certified copy of priority document

Document details: Country/Office: US
Number: 60/549,717
Filing date: 03 March 2004 (03.03.2004)

Date of receipt at the International Bureau: 07 April 2005 (07.04.2005)

Remark: Priority document submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b)



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APPLICATION NUMBER: 60/549,717

FILING DATE: *March 03, 2004*

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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

INVENTOR(S)					
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Additional inventors are being named on the ____ separately numbered sheets attached hereto					
TITLE OF THE INVENTION (500 characters max)					
METHOD AND APPARATUS FOR FILLING COIN MAGAZINES					
Direct all correspondence to: CORRESPONDENCE ADDRESS					
<input checked="" type="checkbox"/> Customer Number		26710			
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ENCLOSED APPLICATION PARTS (check all that apply)					
<input checked="" type="checkbox"/> Specification Number of Pages		7	<input type="checkbox"/> CD(s), Number		
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<input type="checkbox"/> Application Data Sheet. See 37 CFR 1.76					
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Respectfully submitted,

SIGNATURE

TYPED or PRINTED NAME Michael J. McGovern

TELEPHONE 414-277-5725

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28,326

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METHOD AND APPARATUS FOR FILLING COIN MAGAZINES

BACKGROUND OF THE INVENTION

The invention relates to coin dispensers, and in particular to coin dispensers of the type for dispensing change. Such coin change dispensers are found, for example, at cashier checkout locations and ticket booths and many other places.

Perhaps the best known type of coin change dispenser has a vertical configuration in which a plurality of upstanding coin holding tubes are aligned in a row. Examples of such coin change dispensers are shown, for example, in Walton, U.S. Pat. No. 3,590,833 and Duplessy, U.S. Pat. No. 4,593,709.

Coin change dispensers having a circular or cylindrical coin magazine have been recently disclosed in Adams et al., allowed U.S. Pat. Appl. No. 09/994,415, filed November 27, 2001, and Adams et al., allowed U.S. Pat. Appl. No. 09/785,229, filed February 20, 2001. This cylindrical coin magazine may provide up to thirteen or more channels for holding stacks of coins. The coin magazine can be installed and replaced on a motorized base and removed and carried to a different location for filling or emptying.

The filling of such a coin magazine by hand may take from fifteen to twenty minutes when loading loose coins.

There is a need for an apparatus for more quickly and easily filling the cylindrical magazine described above with coins of the various denominations, as well as filling straight line magazines of the prior art. The apparatus should be compact, inexpensive and portable.

SUMMARY OF THE INVENTION

The invention provides an apparatus for receiving a batch of coins of a respective denomination, generally arranging

them in single file and then feeding them into coin channels for the respective denomination in the magazine until the channels of the coin magazine are full or nearly full.

The invention provides a device for filling a coin magazine in five minutes or less instead of the twenty minutes necessary for a manual operation. The coin filling apparatus can hold enough coins from each denomination to fill an entire channel and possibly multiple channels with that denomination. The apparatus processes each denomination individually, but may be used to fill more than one coin channel with a particular denomination.

One object of the invention is to provide a coin filling apparatus for filling an integral coin magazine in which coins are easily loaded, securely held and dispensed.

Another object of the invention is to obviate the use of a cover, which is slipped over the coin magazine for filling operations to assist holding the coins in their respective channels.

Another object of the invention is provide a minimum number of parts in a coin filling apparatus, thereby reducing costs of the apparatus.

One advantage of the invention is that it is easily adaptable to different national coin sets and to different change capacities, such as \$.99 (US) or 19.90 Mexican pesos, as examples. One filling apparatus could be used with different magazines, including magazines with coins from different countries.

The coin magazine filling apparatus of the invention can be used in many applications. The coin magazine filling apparatus of the invention is compact, is inexpensive to manufacture and is portable.

Other objects and advantages of the invention, besides those discussed above, will be apparent to those of ordinary skill in the art from the description of the preferred embodiments which follow. In the description, reference is

made to the accompanying drawings, which form a part hereof, and which illustrate examples of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a front perspective view of a coin filling apparatus according to one embodiment of the invention;

Fig. 2 is a rear perspective view of a coin filling apparatus of Fig. 1;

Fig. 3 is a top plan view the coin filling apparatus of Fig. 1;

Fig. 4 is a perspective view of a coin filling apparatus according to a second embodiment of the invention;

Fig. 5 is a top plan view of the coin filling apparatus of Fig. 4;

Figs. 6 is a second perspective view of a coin filling apparatus according to a second embodiment of the invention in an open position;

Figs. 7 is a view of the coin filling apparatus of Fig. 5 with the coin magazine removed;

Fig. 8 shows the second embodiment being used to fill a straight line magazine;

Fig. 9 is a detail perspective view of a portion of the coin filling apparatus of Figs. 4-8 handling smaller coins;

Fig. 10 is a detail perspective view of a portion of the coin filling apparatus of Figs. 4-8 handling larger coins;

Fig. 11 illustrates examples of two types of coin magazines which can be filled using the present invention; and

Fig. 12 illustrates a variation in the coin feeding device used in the embodiments of the invention.

DETAILED DESCRIPTION

Examples of a coin magazine filling apparatus 10, 40 according to the present invention are illustrated in Figs. 1-13. As shown in Fig. 1, a cylindrical coin magazine 20 is disposed in the apparatus 10 for filling with coins. The coin magazine 20 is described in detail in Adams, U.S. Pat. Appl. No. 09/994,415, filed November 27, 2001. The magazine 20 is formed with a plurality of upstanding coin channels 26, in this example, numbering twelve. As seen in Fig. 1-3, the coin channels 12 are empty, however, in use, these channels 26 would hold stacks of coins, each channel 26 being dedicated to a corresponding denomination, as illustrated in Figs. 4 and 5. It may be also be advantageous to have more than one stack of coins for certain denominations, such as pennies, for example, in making up \$.99 change for one U.S. dollar.

As seen best in Fig. 1-3, the coin magazine assembly 20 includes a cylindrical coin magazine member 21 and a ring-shaped magazine base member 22, which are integrally molded components made of a high durability plastic material or metal. The coin magazine member 21 is generally cylindrical in shape and forms a plurality of longitudinally extending coin-holding channels 26 around its periphery, with coin exit openings 23 (Fig. 3) through its outer surface. As seen best in Fig. 3, each channel 26 has a sidewall seen in a C-shape in cross section with an opening 23 in the channel sidewall facing to the outside of the magazine assembly 20. The diameter of each channel 26 varies according to the denomination of coins it will hold.

Referring to Fig. 3, magazine base member 22 forms partial floors 24 for each channel 26. When assembled with the cylindrical magazine 21, this member 22 forms an arcuate slot 25 for each channel 26 for receiving a pin of a coin ejector (not shown). The slots 25 are formed along a circular coin path followed by the stacks of coins as the magazine assembly 20 is rotated.

Magazine members 21 can be provided for a variety of different mixes of coins. For example, one magazine member 21 could have coin channels with different sizes (diameters) to hold a mix of coins (pennies, nickels, dimes, quarters, dollar coins), while another magazine member 21 could have coin channels with a different mix of diameters based on the business in which the coin dispenser is used. Different coin magazines would also be used for coin sets of countries outside the United States.

The filling of a coin magazine by hand may take from fifteen to twenty minutes when filling with loose coins. The invention provides a device for filling a coin magazine in approximately five minutes instead of the twenty minutes necessary for a manual operation. The device is portable and will handle magazines of differing configurations, even straight-line instead of circular configurations.

As seen in Fig. 1, the filling apparatus 10 of the present invention has a base 11 with an inclined ramp 12 of approximately eighteen degrees from horizontal. The coin magazine 20 is disposed in the apparatus on the ramp 12 so as to be tilted at an angle of about eighteen degrees from vertical. This aids the feeding of coins into the coin channels 26. The apparatus also has side walls 13 rising from the base 11 and a top cover 14 that pivots upward from the side walls 13 to open the apparatus 10 when inserting or removing coin magazines 20.

Positioned on the top cover 14 is a coin feeding mechanism 15 which receives a batch of coins of a particular denomination and arranges them into a single file for feeding to a diverter chute 17 that directs the coins into a top end of a channel 26 positioned just below the chute 17.

A feed disc 30 is positioned from rear to front at an angle of about fifteen degrees below horizontal to aid the shedding of coins and ensuring that one layer of coins is fed upwardly towards the entrance to the chute 17.

The coin feeding mechanism 15 is powered in this example by a hand crank 16. Referring next, to Fig. 2, the crank has a pulley 18 which receives one end of a belt (not shown) which has an opposite disposed around a pulley 19 on a shaft (not shown) attached to the disc 30 for rotating the disc 30 when the crank is operated. As seen in Fig. 3, there is also a central hub 32 on the disc 30 for assisting in directing the coins toward a coin point 31.

Further details of the invention are seen in a prototype apparatus 40 illustrated in Figs. 4-7. The apparatus 40 includes a base 41, upright frame members 42 rising from the base and a pivotable upper frame structure 43, which supports a coin feeding mechanism 45. A coin magazine 21, 22 with stacks of coins 27 is positioned in a cavity in the apparatus formed into the base 41, between the upright members 42 and beneath the pivotable upper frame structure 43. In practice, a ramp would be provided as seen in Fig. 3 so that the coin magazine is tilted at an angle to receive coins.

The coin feeding mechanism 45 includes a rotatable disc 50 with a coin track portion 53 that extends around the disc 50 between a side wall 54 and a central hub 52. As seen in Fig. 5, there is a coin bumper 55 along the inside of the side wall 54 leading towards a coin point member 51 which further leads to a coin exit 56. The coin feeding mechanism 45 will arrange the coins 80 in Fig. 9 and 81 in Fig. 10 in single file before they reach the exit 56. The bumper 55 in Fig. 9 and 57 in Fig. 10 will tend to bump off coins that become stacked on the bottom layer of coins. These coins will be moved across the hub 52 to start again on the coin track portion 53. The hub 52 also forms an inside edge for coins on the bottom layer which next encounter the coin point member before exiting the disc through exit 56.

As seen in Figs. 4 and 5, the disc 50 can be powered through a hand crank 66 or through a motor 60. The motor 60 has a shaft 61 which would be connected through a drive belt (not shown) to a shaft on the disc 50. Electric power would

be supplied to the motor 60 through leads 62. The unit could be provided with a battery as a source of power.

Figs. 6 shows how the coin feeding mechanism 45 can be tilted upward by pivoting the upper frame structure 43 for removal or insertion of a coin magazine 20. Fig. 7 shows an empty coin filling apparatus 40.

Fig. 8 shows the coin filling apparatus of Figs. 4-7 applied to a straight line coin magazine. A mechanism for sliding the magazine by the coin exit chute 47, 48 to fill succeeding coin channels 71 would be provided.

As seen in Fig. 11, a cover 29 is available for covering the magazine 20 to assist the loading of coins therein or for transport. One object of the present invention is to obviate the need of such a cover 29 when filling the magazines 20 with coins. Once the coins are loaded, it is possible to place the cover 29 over the magazine and transport it by gripping a handle 28 seen in Fig. 5. It is also typical to use a cover 72 with the inline coin magazine 70, but this would not be necessary when loading coins with the filling apparatus of the present invention.

Fig. 12 shows an alternative to the feeding mechanism 45 in which a plate 90 with four scallop cut-out portions 91 would be used to pick up coins dumped into the hopper defined by the side wall 54 and convey them one at a time to the coin exit 56. The scallop cut-out portions 91 can be sized to pick up multiple coins or only one coin each. The pickup plate 91 would be mounted on a drive hub comparable to hub 52, to be driven by the mechanical power output shaft.

The invention also contemplates a visual alignment device for signaling or showing the user that a coin channel is properly aligned with the coin exit 56.

This has been a description of preferred embodiments of the invention. Those of ordinary skill in the art will recognize that modifications might be made while still coming within the scope and spirit of the present invention.

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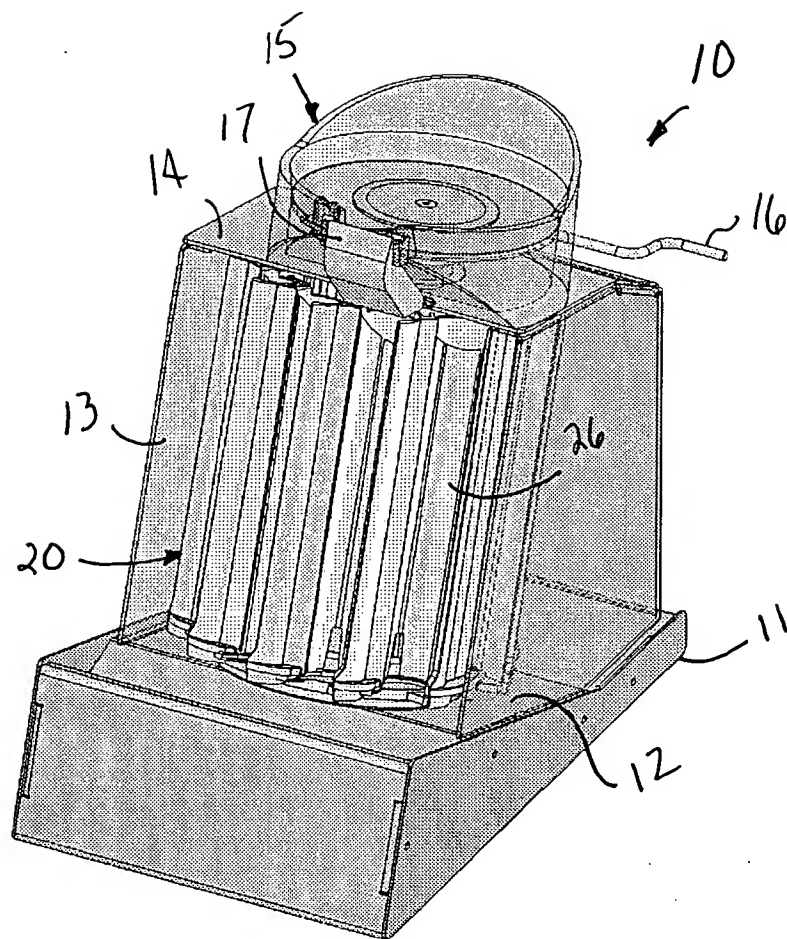


FIG. 1

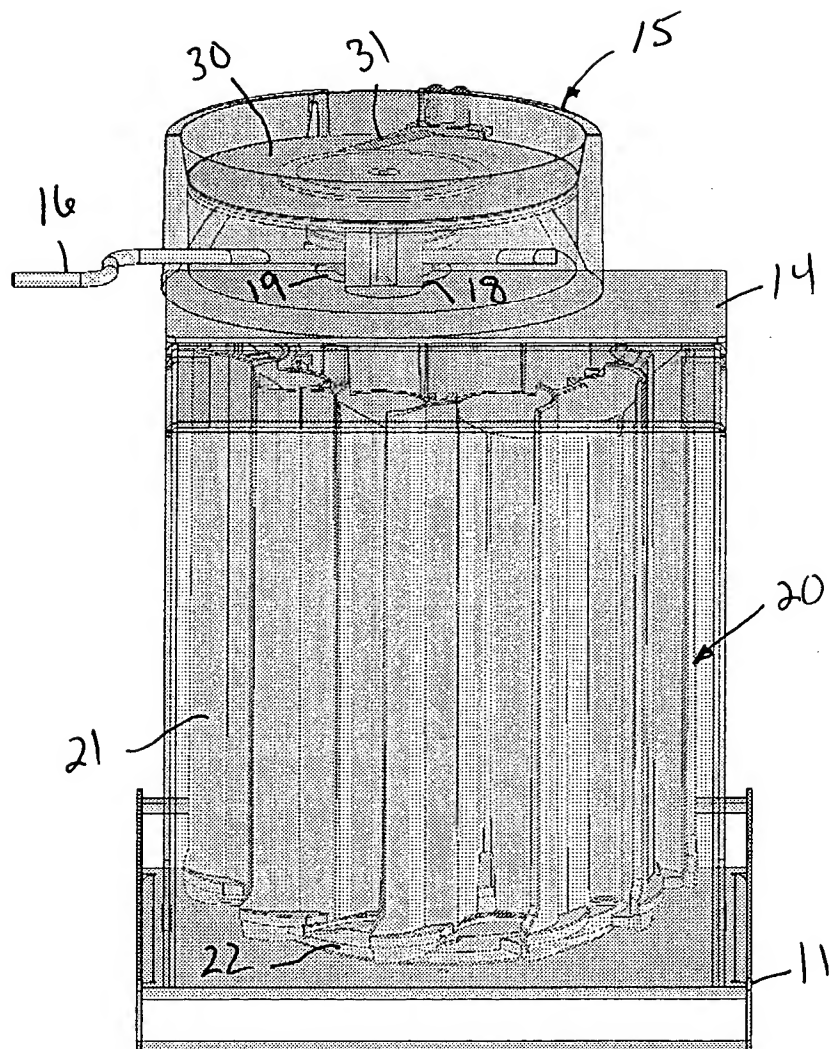


FIG. 2

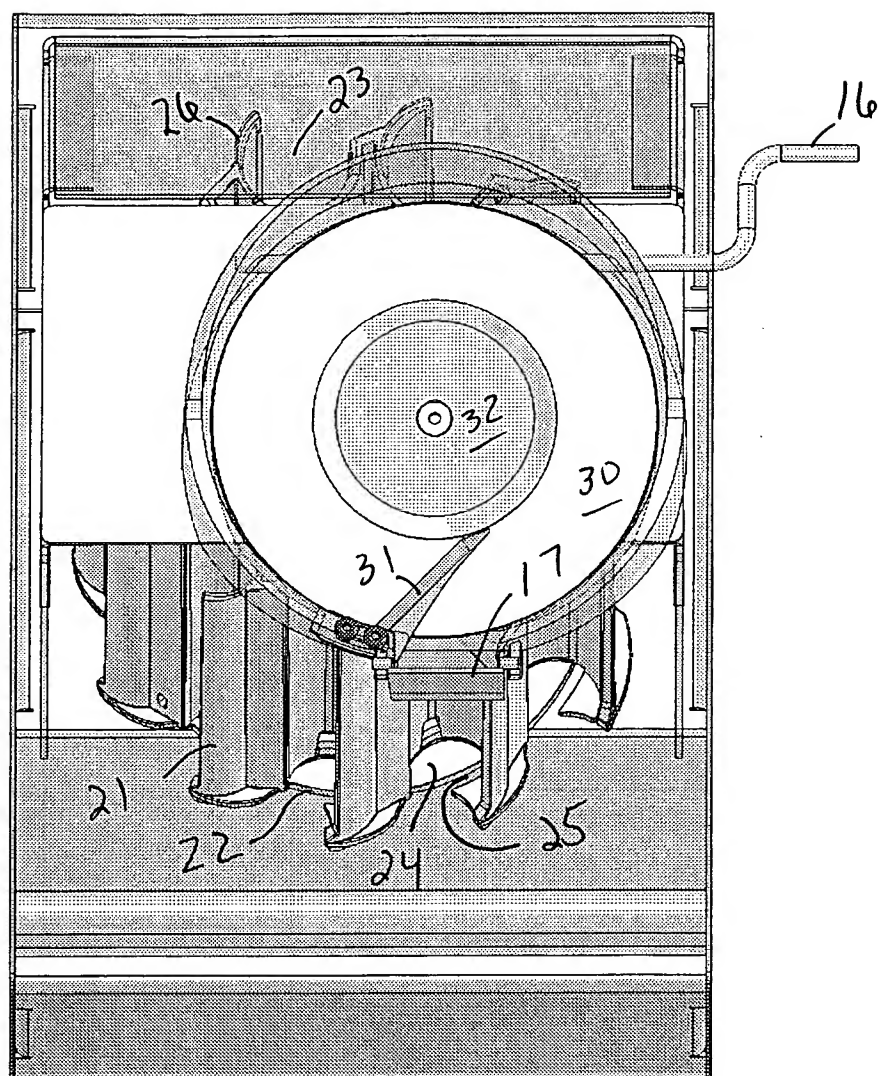
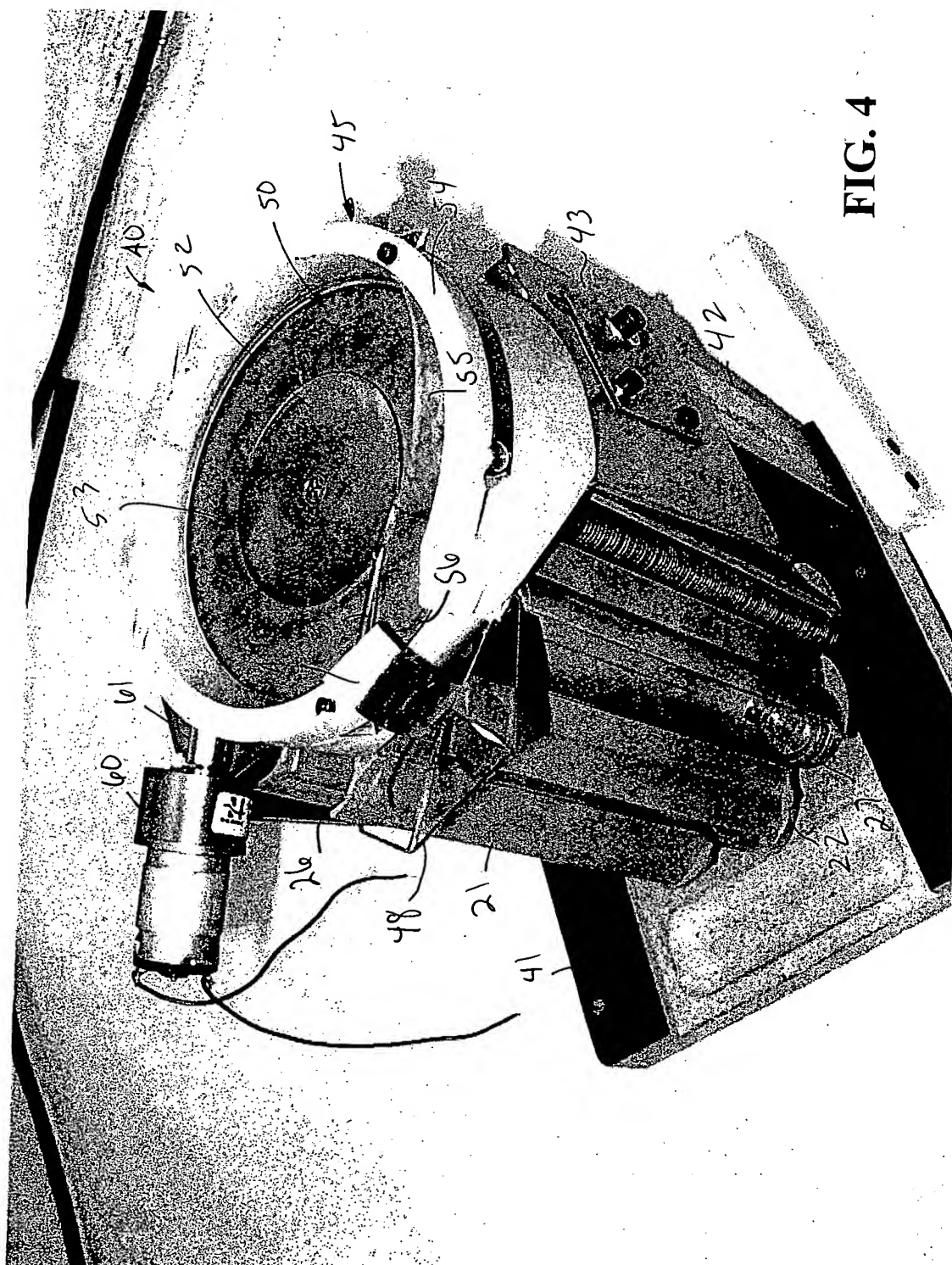


FIG. 3



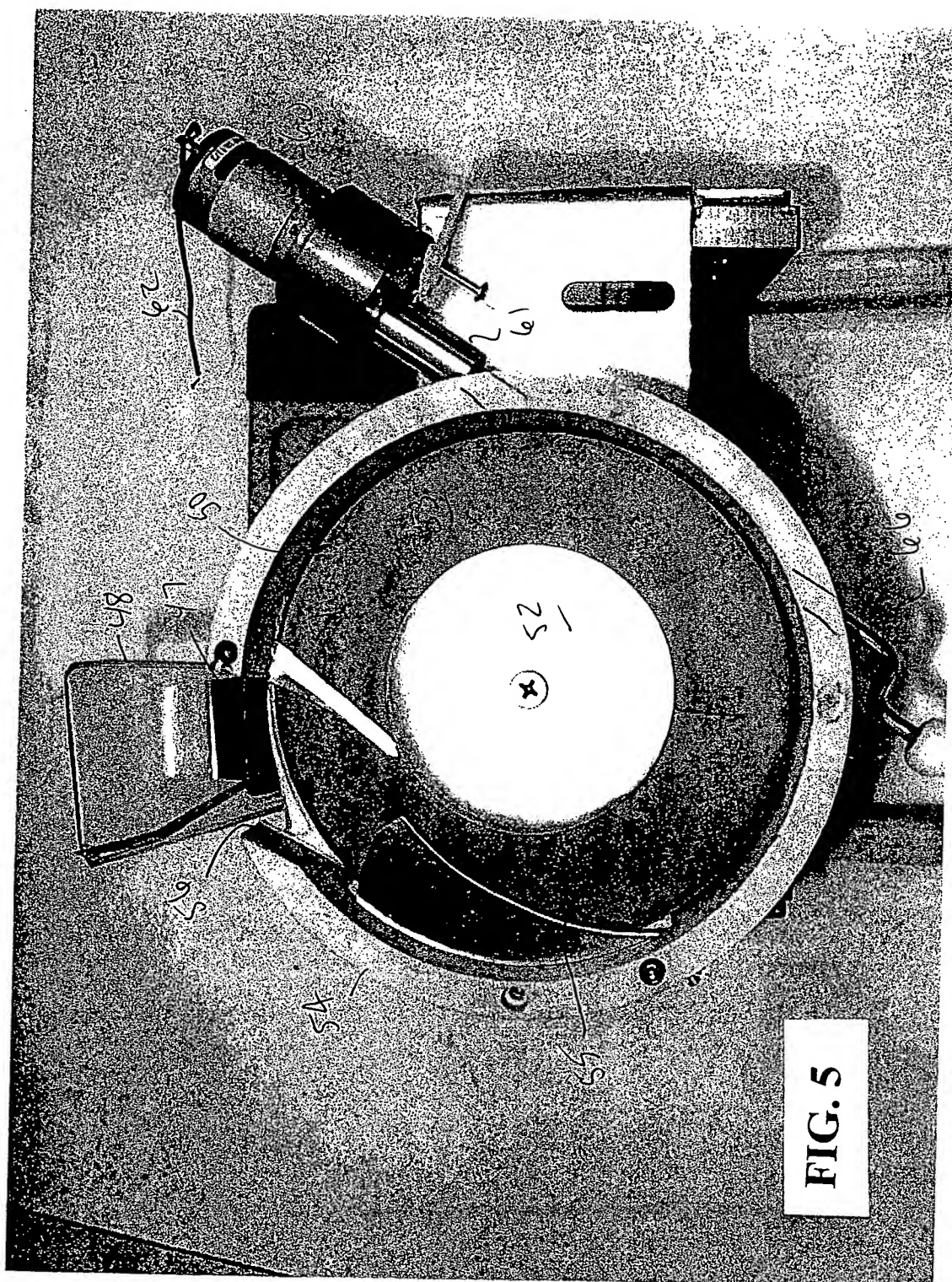


FIG. 5

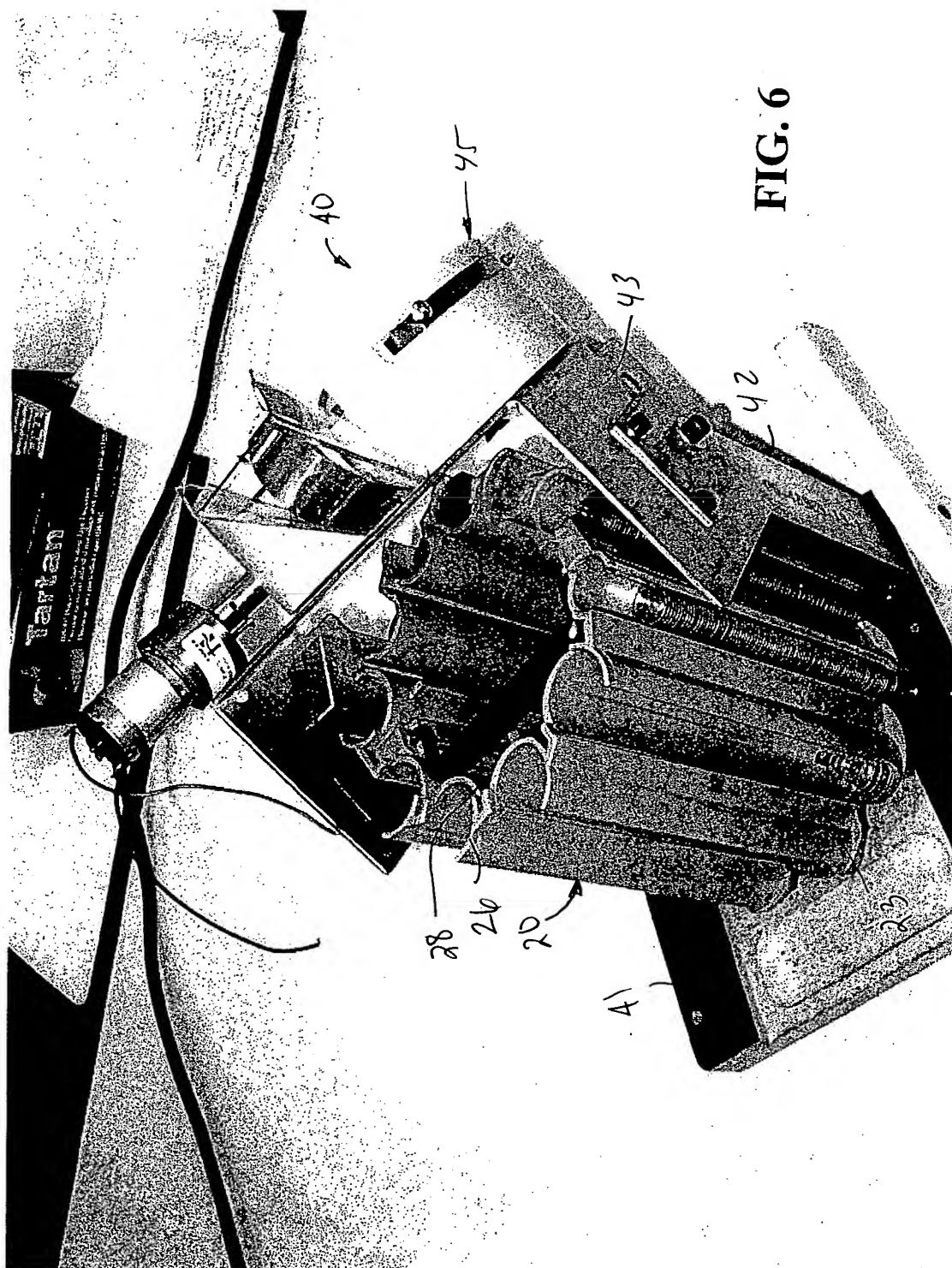


FIG. 6

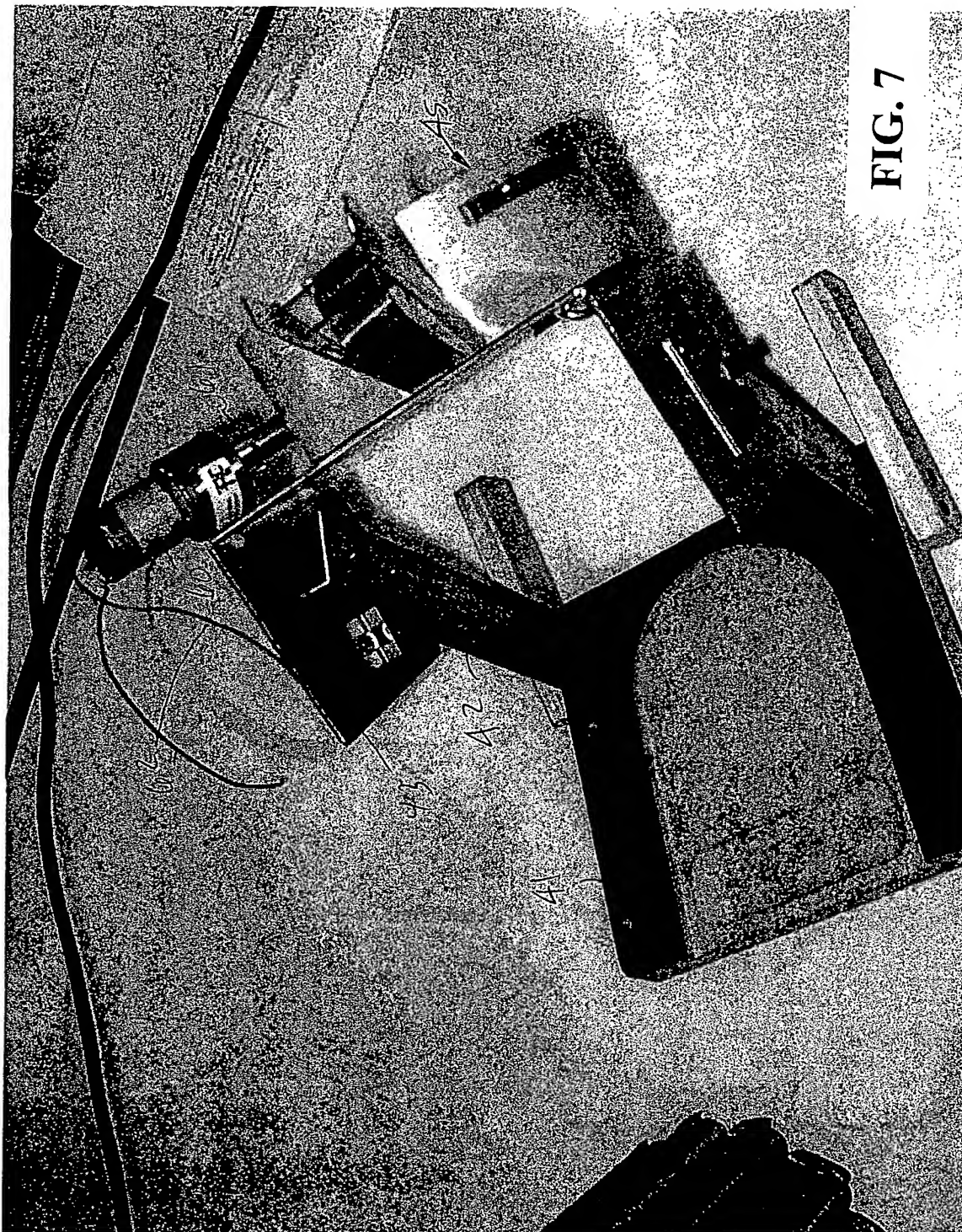


FIG. 7

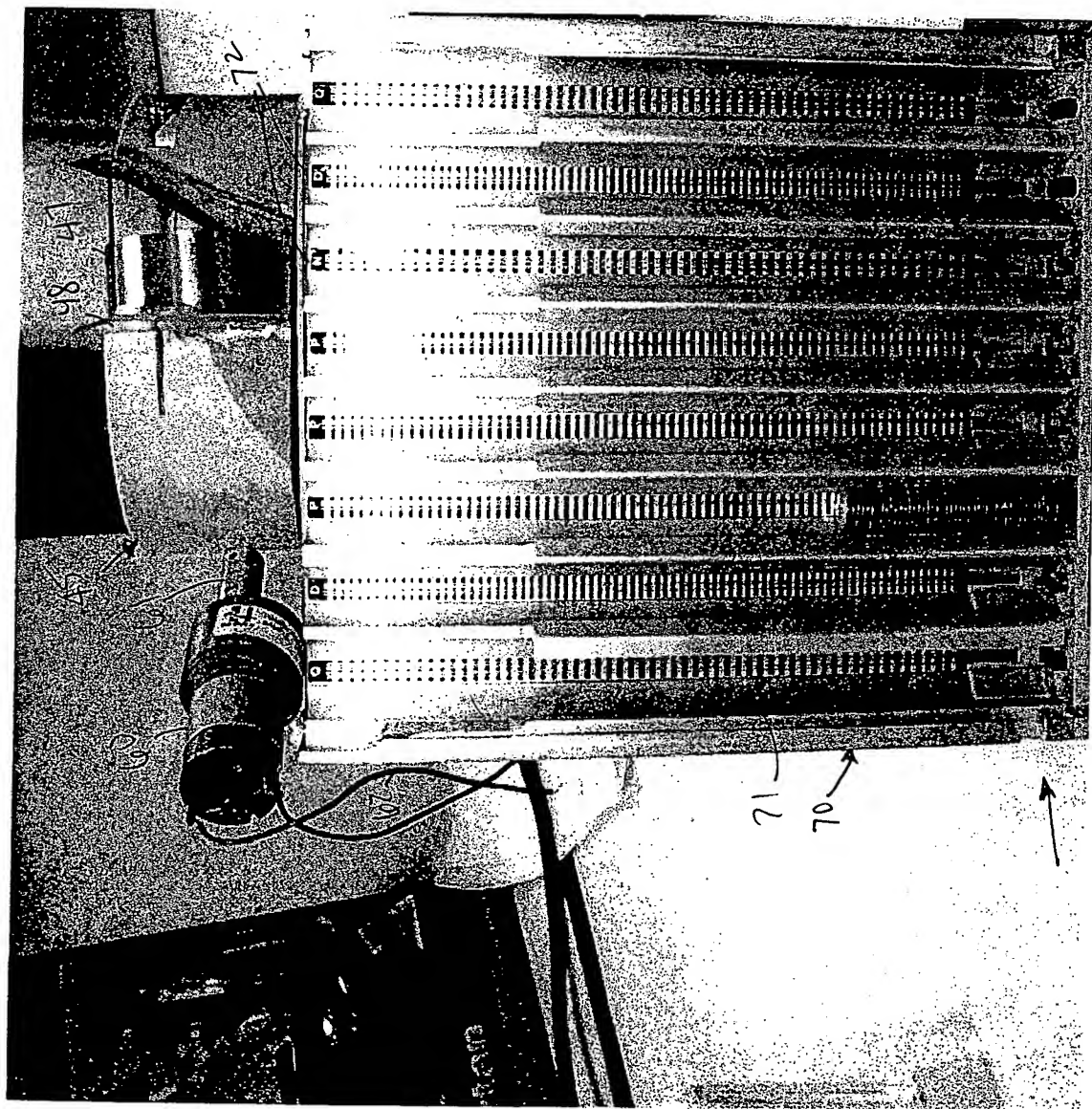


FIG. 8

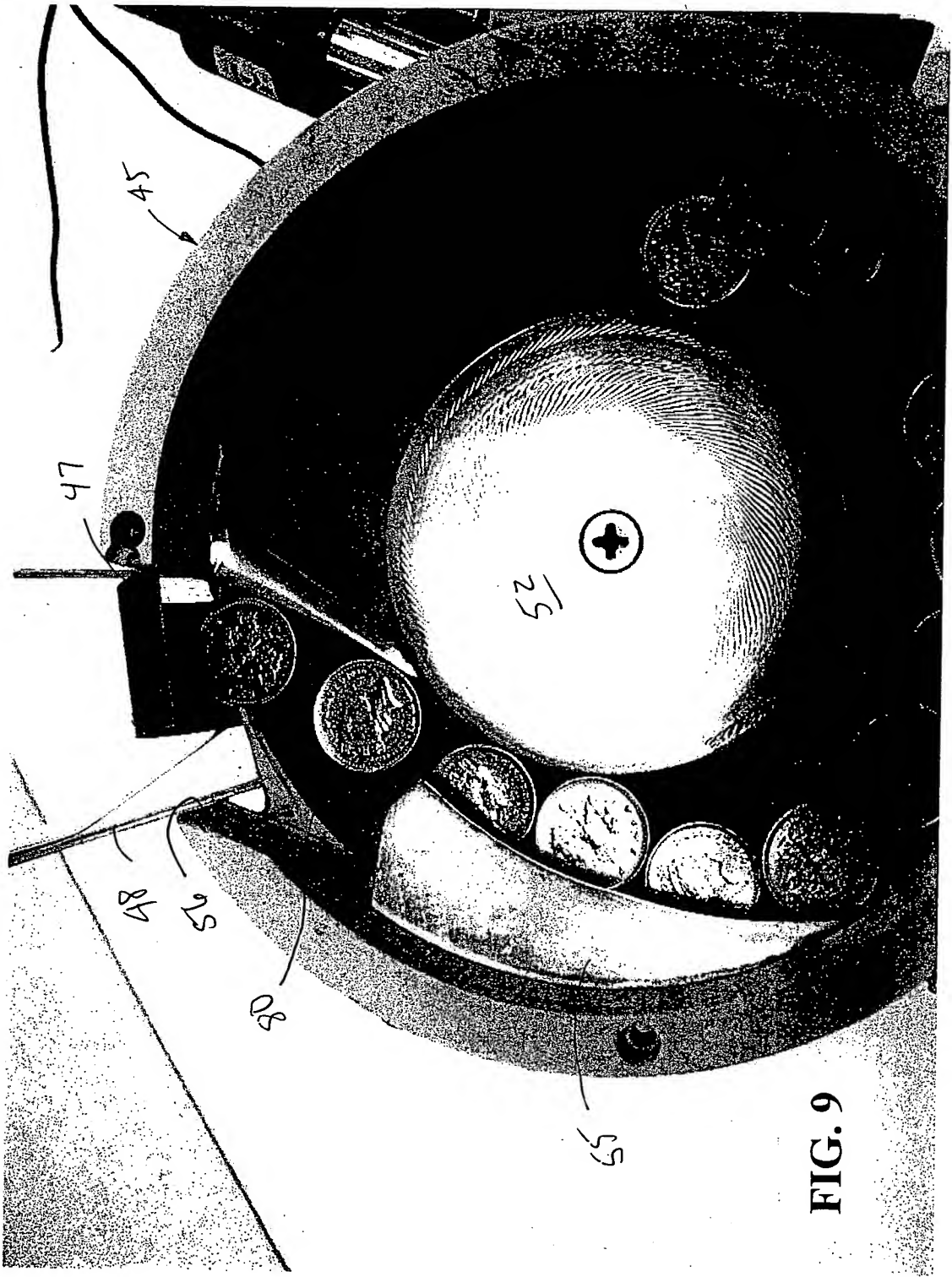


FIG. 9

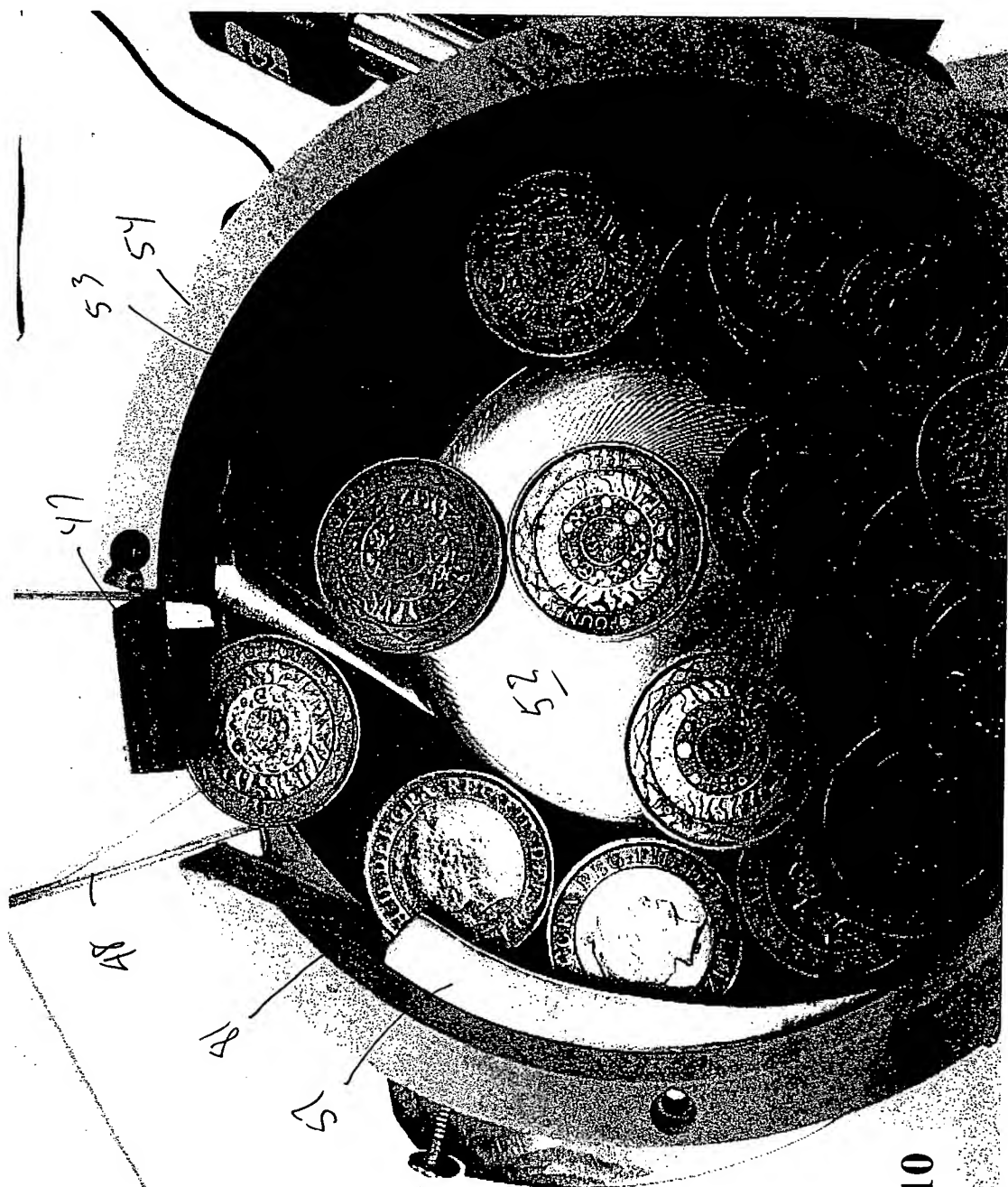


FIG. 10

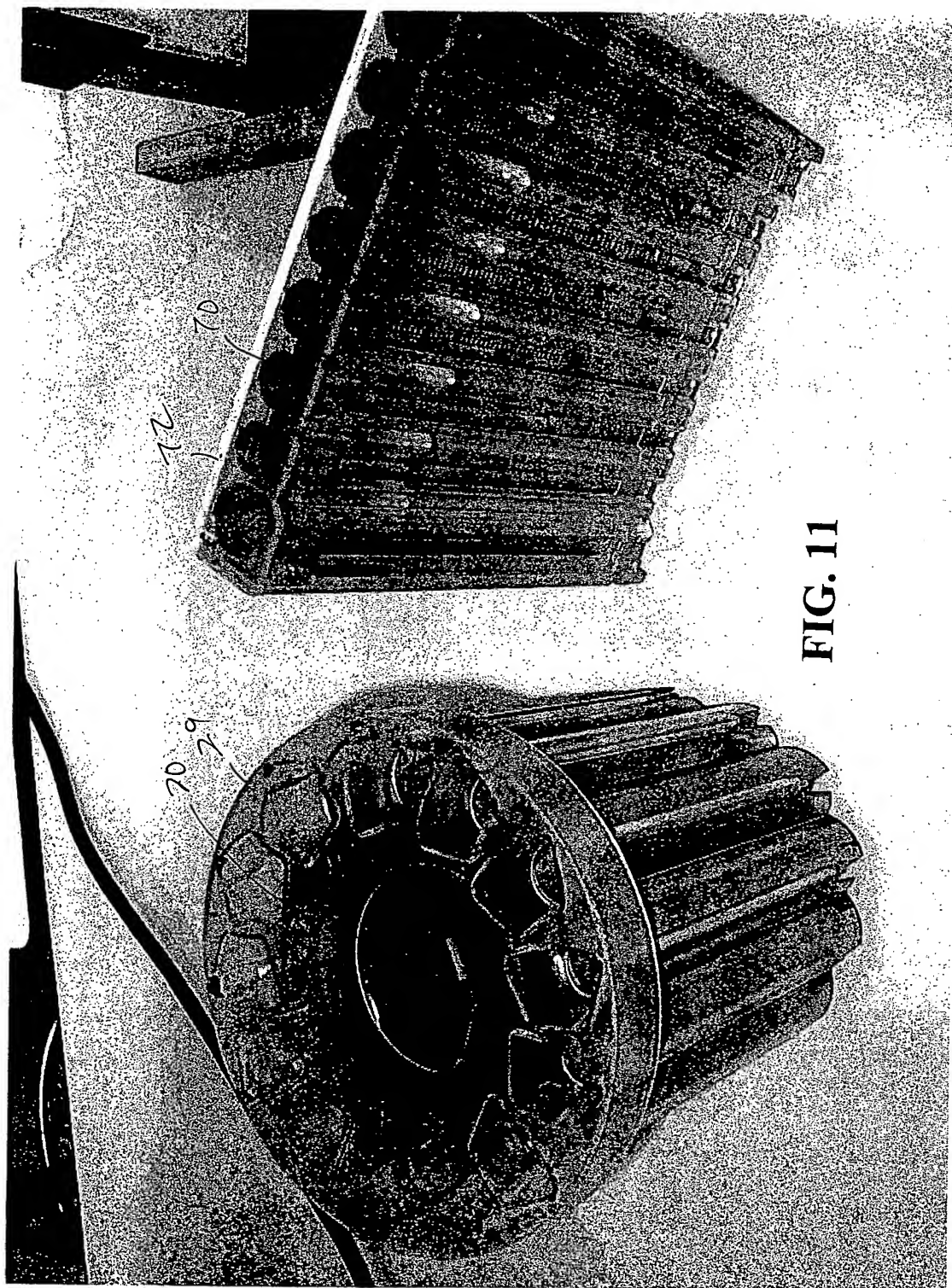


FIG. 11

